METHODS FOR DETERMINING ~~THERAPEUTIC~~ BENEFICIAL RESONANT FREQUENCIES

CROSS REFERENCE TO RELATED APPLICATIONS

This application claims priority to applicant's co-pending application having U.S. Serial No. 60/181,460, filed February 10, 2000.

FIELD OF THE INVENTION

The present invention relates to methods for determining resonant frequencies having ~~therapeutic~~ beneficial uses in a variety of settings. In particular, the present invention provides methods for efficiently determining ~~therapeutic~~ useful resonant frequencies ~~for~~ to influence biological nucleic acids, in particular complete ~~genomes,~~ genomes of pathogens, or partial genomic materials composed of DNA or RNA, ~~and atoms and molecules, for use in various~~ which may be present in a variety of surrounding media ~~having different refractivities.~~ that may have velocities of propagation of electromagnetic waves different from that of air.

BACKGROUND OF THE INVENTION

Resonant frequency therapy (RFT) is a non-invasive treatment that has been reported to offer significant relief to sufferers of a variety of ailments and medical conditions. The use of RFT for human and animal therapeutic purposes began in the early 1900's, and experienced accelerated development through the research of Royal Rife and his associates in the 1930's and afterward.

Using new microscope technology he developed, Rife observed that specific disease-causing microorganisms each ~~had~~ responded to a definite and distinct ~~wavelength~~ frequency. Rife discovered that plasma waves could be used to transmit radio and audio frequencies, which

were tuned to the frequencies of specific microorganisms, and that each microorganism repeatedly responded to its unique frequency or frequencies emitted from a plasma emission device. For example, Rife found that staphylococcus, streptococcus, microorganisms associated with tuberculosis, typhoid, and leprosy, as well as cancer particles, and other disease-causing agents succumbed when exposed to certain frequencies peculiar to each organism or particle. See, Siedel, R.E., and M.E. Winter, The New Microscopes, Smithsonian Annual Report 1944, pp. 193-200.

Using the principles of Rife's discoveries, various researchers developed devices for emitting ~~energy~~ frequencies designed to treat a range of diseases and conditions. For example, Dr. Abraham Ginsberg used an apparatus which produced intermittent bursts of high energy in the short wave spectrum. Ginsberg's modality was found to stimulate the reticuloendothelial system without undesirably heating tissue. Using his device, Ginsberg reported successfully treating patients with various clinical conditions, including chronic Staphylococcus infections, acute inflammatory middle ear, chronic ulcerative colitis, bronchitis, rheumatoid arthritis, gout, flu, and thrombophlebitis, among others. See, Cominole, B., Clinical Impressions and Speculations on the Use of High-Frequency Pulsed Energy, The Dr. Abraham J. Ginsberg Foundation for Medical Research Symposium, June 29, 1959.

Research utilizing resonant frequencies and therapeutic modalities implementing such frequencies have proliferated over the past ~~ten~~ fifteen years. A recent example of the use of resonant frequency therapy is the Christchurch Resonant Frequency Therapy Centre in Dunedin, New Zealand. While the Centre emphasizes that resonant frequency therapy is not intended to replace treatment regimens and medication prescribed by physicians, it does report successful treatment of a range of clinical conditions, including arthritis, tinnitis, blood pressure, cataracts,

headaches, shingles, and psoriasis. Arthritis patients report particular success with pain reduction and greater mobility. See The Christchurch Press, Frequency Therapy Offers Relief, Independent Newspapers Limited, Oct. 28, 1999.

Thus, the use of electric fields and/or magnetic fields, ~~and~~ delivered with ~~audio~~ audio-range, ~~radio~~ radio-range, and ~~light~~ visible-range frequency waves to inhibit microbial growth and to treat diseases and affected tissue is well known in the art. Effective ~~therapeutic~~ beneficial ~~resonant~~ frequencies have been identified through various means. ~~Trial~~ Numerous trial and error approaches with ~~resonant~~ frequencies have been used through the course of many years to obtain ~~therapeutic~~ beneficial responses. Devices for applying electromagnetic energy to living tissue are disclosed, for example, in U.S. Patent No. 3,876,373, U.S. Patent No. 4,524,079, and U.S. Patent No. 5,091,152. Effective ~~resonant~~ frequencies have also been identified through the use of frequency scanning with electronic devices ~~capable~~ claiming the capability of detecting a frequency response from a bacterial, viral, and/or tissue sample. Such devices for detecting frequency response are disclosed, for example, in U.S. Patent No. 5,552,274, U.S. Patent No. 5,981,182, and U.S. Patent No. 6,004,257. Thus, there exists a need for a more efficient and accurate ~~methods~~ method than trial and error to determine ~~therapeutic resonant~~ frequencies useful against ~~for~~ specific target materials, such as microorganisms.

~~Therapeutic~~ Resonant frequencies may be used to inhibit, or debilitate, ~~and/or~~ or conversely to stimulate a biophysical event. The efficacy of such frequencies, whether for stimulation or for debilitation, depends to some extent on the type of frequency delivery system used, including variables such as power levels, waveform, harmonic content of the wave, and other factors. Once ~~therapeutic~~ beneficial resonant frequencies are determined, ~~a practitioner~~ the user must choose which devices and delivery systems are most effectively used in conjunction

with those frequencies. To increase ~~therapy~~ general efficacy, an easier, quicker, and more accurate way of determining ~~therapeutic~~ resonant frequencies ~~for use with particular devices~~ is needed.

Despite both historical and increasing recent interest in use of resonant frequency therapy, mechanism(s) of action underlying the use of ~~known therapeutic resonant~~ accepted beneficial frequencies is not fully understood. ~~For instance,~~ While it is generally recognized that some type of resonance phenomenon ~~debilitates or destroys~~ underlies the debilitation or destruction of microorganisms, the biophysical and/or biochemical mechanism(s) associated with use of specific resonant frequencies and that lead to microbial inhibition are not completely known.

Before now, there has never existed a methodology that links ~~effective therapeutic~~ resonant frequencies to a biophysical or biochemical event, process, or structure. The electronic scanning devices and methods currently commercially available provide no explanation or insight regarding which physical structure or process is influenced by the frequencies used.

In PCT patent application WO 8403165 A1, French physicist Joel Sternheimer discloses that by converting atomic or molecular mass to frequency, quantum vibrations that occur at the molecular level as a protein is being assembled from its constituent amino acids can be translated into ~~musical notes~~ audio-range frequencies. High frequencies associated with vibrations of atoms and molecules in the cosmic region of the electromagnetic spectrum can be transposed a certain number of octaves downwardly to ~~the~~ frequencies in the human audible range. ~~In making such a translation from quantum amounts of electromagnetic energy to human audible frequencies, Sternheimer~~ However, Sternheimer's method does not account for how the velocity~~, or or speed~~ of a light or sound wave, as well as the wavelength of the emission, changes

as it travels from air into a different ~~through a surrounding~~ medium, such as living tissue. Thus, a ~~musical~~ frequency derived by Sternheimer's method may not be the ~~most closely related, or therapeutic,~~ optimum frequency ~~for a particular~~ to achieve the desired biophysical event.

~~Therefore,~~ There is a need for ~~methods~~ methodology to more readily and efficiently determine ~~therapeutic resonant~~ wavelengths and frequencies intended to influence ~~for~~ specific ~~genomic, atomic, and molecular~~ nucleic acid materials. ~~that~~ The methodology would provide for precise adjustments of the wavelength as required by ~~for~~ the refractive index of a surrounding medium, and ~~that can~~ the corresponding frequency could then be easily and accurately ~~translated~~ adjusted to ranges ~~useful in~~ used by currently available devices. It is to these perceived needs that the present invention is directed.

SUMMARY OF INVENTION

The present invention provides methods for determining resonant frequencies having ~~therapeutic~~ beneficial ~~uses~~ outcome in a variety of settings. In particular, the present invention provides methods for efficiently and accurately determining ~~therapeutic~~ resonant frequencies for complete genomes, partial genomic materials, and nucleic acids of biological origin, ~~and atoms and molecules,~~ for use in conjunction with various media having ~~different refractivities.~~ velocities of propagation of electromagnetic waves different than that of air.

Methods of the present invention utilize biophysical and biochemical properties of ~~genomic materials and atoms and molecules~~ nucleic acids of biological origin and their surrounding media, to determine ~~therapeutic~~ resonant wavelengths and frequencies. For example, the length of any object can be considered as having a resonant frequency by virtue of correlation with a wavelength that ~~manifests itself into a~~ is presented to its innate material, or into the immediately surrounding medium or atmosphere. A very common example of such

resonance is connected with the height of the human body. It is well accepted that certain ranges of radio frequency wavelengths that are related to human heights will cause resonance and increased absorption of energy from the wave. For that reason, those particular bands of radio wavelengths cannot be safely used for broadcasting. ~~On that basis,~~ Using the very same concept, the length of biomolecular chains of DNA and RNA can be ~~measured~~ calculated, and thus can provide ~~wavelength~~ wavelength-matching information unique to a specific strand of ~~genomic material~~ nucleic acid. ~~Specifically, it is known that a strand of DNA has conductive characteristics. The dipole features of a DNA strand give it directionality as to how the charged molecular components are aligned in the chain. If a DNA double helix is unraveled, each length of unraveled chain has a positive charge on one end, and a negative charge on the other end, due to the alignment of its nucleotides. As such, a DNA strand exhibits characteristics of a length of linear antenna and can provide wavelength information for use in determining resonant frequencies useful in a therapeutic manner.~~

~~When two strands of DNA are bonded with each other in the usual helical form, the strands are aligned parallel to each other but have opposite polarities on adjacent ends of each strand. The double-strand configuration can be compared to two waveforms, slightly offset in phase, traveling in opposite directions. Moreover, when the two strands are bonded in normal form,~~ DNA or RNA chains are constructed in such a way that negatively-charged molecular ions (the PO_4 groups) run the entire length of the molecule on the outer surface of the chain in a helical fashion, causing the molecule to contain a ~~relatively~~ large negative charge on its surface. The medium surrounding these nucleic acid chains also contain a large number of positive ions (termed the "Manning cloud"), as well as polar water molecules that orient their positive side toward the negatively-charged chain. Thus the chain ~~is~~ and its surrounding medium would be

highly electro-sensitive to the influences of ~~resonant~~ external oscillating electromagnetic fields~~, or frequencies~~.

Resonance is defined as the increase in amplitude of the natural oscillation, ~~or frequency,~~ of ~~an~~ a system when exposed to ~~a~~ an external periodic force whose frequency is equal or very close to the natural frequency of the system. The natural oscillation of a system or part of a system in time is defined as its "natural resonant frequency" and is intimately linked with how the entire length of the wave travels through the system. As an example, when a system, such as a strand of DNA, is exposed to a frequency that presents a wavelength which is the same or very close to the ~~natural resonant frequency~~ innate length parameter of the particular DNA strand, the ~~frequency of the DNA strand will~~ motion of the externally-emitted wave can cause an increase in motional or electronic ~~amplitude~~ response of the DNA and its surrounding medium, ~~or~~ causing the DNA to resonate.

~~In radio science, the length of an antenna will largely determine how effectively the antenna responds to the wavelength energy of an incoming transmission. Methods for determining therapeutic resonant frequencies of the present invention utilize the principle that the length of a DNA or RNA helical chain can be electromagnetically resonated in similar fashion.~~

~~The resonance of atoms and molecules can also be derived from the wavelength initially associated with the deBroglie matter-wave, as described below. The resulting wavelength can then be electromagnetically resonated using appropriate criteria consistent with the surrounding medium.~~

Methods of the present invention allow precise correlations between ~~therapeutic~~ resonant frequencies and the ~~wavelength~~ length parameter of the ~~genomic, molecular, or atomic material~~ nucleic acid chain under consideration. If a resonant frequency and its associated wavelength

~~delivered in a therapeutic modality~~ is generated in air (or a vacuum) while the target ~~material~~ nucleic acid chain resides in a different medium, in this invention's method a refractive adjustment is made to insure that the wavelength traveling from the air or vacuum medium transforms to the wavelength of the target material in the surrounding medium. By ~~accounting for an appropriate~~ making use of the electromagnetic refractive index ~~for~~ associated with the specific surrounding medium, such as water or tissue, methods of the present invention provide the advantage of determining a ~~resonant~~ frequency that would be more closely related to the innate length parameter and the natural resonant frequency, and thus more appropriate ~~, or therapeutic,~~ for the ~~genomic, atomic, or molecular system~~ nucleic acid chain in that specific medium.

The ~~natural electromagnetic resonant frequencies for~~ innate length of most DNA or RNA genomes if considered to be a wavelength, would most often fall ~~for the most part~~ in the infrared region of the electromagnetic ~~(EM)~~ spectrum. The ~~natural resonant frequencies~~ similar associated wavelengths for very small genomes, genes and smaller portions of ~~DNA~~ nucleic acid chains would appear in the near infrared, visible, and near ultraviolet regions of the spectrum~~, while the natural resonant frequencies for atoms and molecules fall near the cosmic region of the EM spectrum~~. For many currently available frequency-emitting, or wavelength ~~generator,~~ generating devices, ~~EM fields with such natural resonant frequencies~~ emissions capable of such high-spectrum wavelengths such as those ~~for~~ associated with ~~genomic, molecular, and atomic~~ nucleic acid material are not achievable due to the technical limitations or in some cases the price of the device. Indeed, particular devices often are capable of generating frequencies in only narrow ~~EM field~~ electromagnetic frequency ranges. To overcome such limitations, methods of the present invention adjust resonant frequencies upward or downward. To determine an

appropriate lower range frequency in accordance with the present invention, the ~~therapeutic~~ resonant frequency is divided by the number 2, as many times as necessary, until a frequency in the frequency-generating range of a device is ~~achieved~~ reached. The actual power of 2 by which ~~a therapeutic~~ an original resonant frequency is ~~factored~~ divided, will depend on the range of the ~~EM~~ electromagnetic spectrum within which a frequency delivery device operates.

In music, a similar adjustment would be termed moving to a higher or lower octave. Moving to a higher octave would in effect cut the wavelength in half, while moving to a lower octave would double the wavelength. In accordance with methods of the present invention, ~~therapeutic~~ resonant frequencies ~~of genomic, molecular, and atomic material~~ associated with nucleic acid chains are translated, or "shifted by octaves," to a lower octave in the ~~EM~~ electromagnetic spectrum, by dividing the ~~therapeutic~~ resonant frequency by ~~some~~ an appropriate power of the number 2. The lower octave of a ~~therapeutic~~ resonant frequency, while having a much longer wavelength, will resonate with the ~~first therapeutic~~ original high-octave resonant frequency, just as musical octaves resonate with and amplify each other, but only when the octave translation is exact. Thus, to be ~~therapeutic~~ effective, a lower-octave resonant frequency must have a precise power of 2 correlation with the ~~natural, or original,~~ original high-octave resonant ~~frequencies~~ frequency of the target material. Likewise, if an octave-related resonant frequency is chosen which is higher than the original resonant frequency, the higher-octave resonant frequency would be accurately determined by multiplying the original one by a precise power of 2.

The present invention comprises methods for determining ~~therapeutic~~ resonant frequencies of electromagnetic ~~radiation~~ emission for influencing a target ~~genomic material~~ nucleic acid chain, where the ~~genomic material~~ chain is surrounded by a medium. Embodiments

of these methods include the following steps: (1) determining a velocity of electromagnetic ~~radiation~~ emission through the medium surrounding the ~~genomic~~ nucleic acid material; (2) determining ~~a wavelength~~ the length of the ~~genomic~~ nucleic acid material; (3) determining a first resonant frequency of the ~~genomic~~ nucleic acid material in one electromagnetic frequency range by dividing the velocity of the electromagnetic ~~radiation through~~ emission associated with the surrounding medium by the ~~wavelength~~ length of the ~~genomic material~~ nucleic acid chain; (4) ~~shifting~~ dividing or multiplying the first resonant frequency by a factor of a power of two to at least one of a group of resonant frequencies in at least one other electromagnetic frequency range; (5) programming a ~~frequency-emitting~~ frequency-capable emission device to emit the at least one of a group of resonant frequencies in the at least one other electromagnetic frequency range; and (6) selectively influencing the target ~~genomic~~ nucleic acid chain material with the at least one of a group of resonant frequencies in the at least one other electromagnetic frequency range when the ~~frequency-emitting~~ frequency-capable emission device emits the at least one of a group of resonant frequencies in the at least one other electromagnetic frequency range into the medium surrounding the target ~~genomic~~ nucleic acid chain material.

Methods of the present invention further comprise determining the ~~wavelength~~ length parameter of the ~~genomic~~ target nucleic acid chain material by ~~determining~~ obtaining the number of ~~base pairs~~ nucleotides in ~~the genomic~~ a single strand of the target nucleic acid chain material, and in the case of double-stranded molecules not including the number of nucleotide bases in the complementary strand; ~~measuring~~ using the known value for the average spacing between adjacent ~~base pairs~~ nucleotide bases and multiplying the number of ~~base pairs~~ nucleotides in the ~~genomic~~ target nucleic acid chain material by the known average spacing value between adjacent ~~base pairs~~ nucleotides. In a preferred embodiment, the ~~base pairs~~ nucleotides are spaced apart by

an average spacing, which is a known value, and determining the ~~wavelength~~ of the ~~genomic material~~ nucleic acid chain comprises ~~determining~~ obtaining the number of ~~base pairs~~ nucleotides in the ~~genomic material~~ chain, and then multiplying ~~the~~ that number of ~~base pairs~~ nucleotides in the ~~genomic material~~ chain by the known value for the average spacing between ~~base pairs~~ nucleotides. As will be obvious to those with minimal knowledge of the art, in the case of double-stranded nucleic acid chains, the number of nucleotides included in the count should include only one side of the double chain, in order to not calculate a chain length twice as long than it actually is.

In a typical environment, ~~genomic~~ biological nucleic acid chain material exists in living, or in-vivo, tissue. In methods of the present invention, the velocity of electromagnetic ~~radiation~~ emissions through in-vivo tissue ~~is~~ can be determined by ~~accounting for~~ obtaining the unique electrical permittivity value ~~of~~ associated with in-vivo tissue ~~in relation to velocity~~, and then determining the in-vivo associated velocity such that the velocity = ~~$1 / \sqrt{(\varepsilon_0 \mu_0)}$, where ε_0 is electrical permittivity, and μ_0 is magnetic permeability.~~ $1 / \sqrt{(\varepsilon \mu)}$, where ε is the electrical permittivity of the medium, and μ is the magnetic permeability of the medium. ~~With~~ Having this measurement of in-vivo velocity, ~~a refractive index of electromagnetic radiation through in-vivo tissue is determined by dividing the velocity of electromagnetic radiation, or the speed of light, in a vacuum by the speed of light in in-vivo tissue. Then by dividing a therapeutic resonant frequency determined for the genomic material in an air medium by the refractive index for in-vivo tissue, a therapeutic resonant frequency for the genomic material surrounded by in-vivo tissue is determined.~~ an initial resonant frequency relating to the target nucleic acid chain can be determined by dividing the in-vivo velocity by the length of the nucleic acid chain under

consideration. This step constitutes using the physics relationship, velocity = frequency times wavelength, or in its variation, velocity divided by wavelength = frequency.

In other embodiments, methods of the present invention include multiplying ~~therapeutic~~ resonant frequencies in ~~a~~ the range ~~adaptable for use in frequency-emitting devices~~ used by an emission device, by a positive integer to determine harmonic frequencies; ~~and~~ or dividing ~~therapeutic~~ resonant frequencies in ~~a~~ the range ~~adaptable for use in frequency-emitting devices~~ used by an emission device, by a positive integer to determine subharmonic frequencies. ~~By programming a frequency-emitting device to emit the harmonic and subharmonic frequencies, target genomic~~ Nucleic acid material ~~is~~ can also be selectively influenced with the ~~therapeutic resonant frequencies and the harmonic and subharmonic frequencies~~ harmonics or subharmonics of the aforementioned resonant frequency, when the ~~frequency-emitting~~ frequency-capable emission device ~~emits these resonant~~ is programmed to emit the harmonically-derived frequencies into the medium surrounding the target ~~genomic material.~~ nucleic acid chain.

~~In other embodiments, the present invention comprises methods for determining therapeutic resonant frequencies of electromagnetic radiation for influencing atomic and molecular particles. In such embodiments, a wavelength of a particle is determined by dividing Plank's constant by the product of the mass of the particle and the speed of light. Using this measurement, methods of the present invention allow determination of therapeutic resonant frequencies as described above.~~

Features of methods for determining ~~therapeutic~~ resonant frequencies of the present invention may be accomplished singularly, or in combination, in one or more of the embodiments of the present invention. As will be appreciated by those of ordinary skill in the

art, the present invention has wide utility in a number of applications as illustrated by the variety of features and advantages discussed below.

Methods of the present invention ~~provides~~ provide numerous advantages over prior efforts to identify ~~therapeutic~~ resonant frequencies. For example, the present invention advantageously provides methods for determining resonant frequencies effective for stimulation and/or debilitation of specific types of DNA and/or RNA genomes, genes and gene sections, ~~atoms and molecules, and/or living tissue.~~ and nucleic acid chains.

Another advantage of the methods of the present invention is that they provide means for readily and efficiently determining ~~therapeutic~~ resonant frequencies ~~that are readily and efficiently accomplished~~ using ~~widely~~ publicly available data.

Another advantage is that the present invention provides methods for readily and efficiently predicting resonant frequencies that can be used ~~therapeutically~~ beneficially in a variety of settings surrounding microbiological and biochemical events, including treatment of various human and animal diseases and conditions, ~~agriculture, water systems,~~ agriculture-related diseases, pathogen contamination of water systems or food processing systems, and others.

Another advantage is that the present invention provides methods for readily and efficiently determining ~~therapeutic~~ resonant frequencies that take into account an appropriate electromagnetic ~~refractive index for~~ wave propagation velocity associated with a surrounding medium. ~~By accounting for an appropriate electromagnetic refractive index for a surrounding medium~~ In so doing, the present invention has the advantage of determining a more precise ~~, or more therapeutic,~~ resonant frequency for the ~~genomic, atomic, or molecular system~~ target nucleic acid chain in a particular medium.

Still another advantage is that the present invention provides easier and more efficient methods for determining resonant frequencies that significantly enhance the ~~therapeutic~~ benefit and cost-effectiveness of currently existing electromagnetic, magnetic, plasma, audio, or other ~~frequency-emitting~~ frequency-capable emission devices.

Another advantage over prior approaches to identifying resonant frequencies is that the present invention provides the advantage of methods that utilize a simple biophysical or biochemical model for explaining and understanding why specific resonant frequencies ~~are~~ can be effective.

As will be realized by those of skill in the art, many different embodiments of methods for determining ~~therapeutic~~ resonant frequencies according to the present invention are possible. Additional uses, objects, advantages, and novel features of the invention are set forth in the detailed description that follows and will become more apparent to those skilled in the art upon examination of the following or by practice of the invention.

DETAILED DESCRIPTION OF THE INVENTION

The present invention comprises methods for determining resonant frequencies having ~~therapeutic~~ beneficial uses in a variety of settings. In particular, the present invention includes methods for efficiently and accurately determining therapeutic resonant frequencies for specific complete genomes, partial genomic materials, and ~~atoms and molecules.~~ nucleic acid chains. Methods of the present invention also comprise means for determining a more precise~~, and more therapeutic,~~ resonant frequency for the ~~genomic-, atomic, or molecular system~~ target nucleic acid chain in a particular medium by accounting for an appropriate electromagnetic ~~refractive index~~ wave propagation velocity for the surrounding medium.

Complete Genome

As described above, an object has a natural resonant frequency by the correlation of the length of the object with a wavelength that manifests into its surrounding medium. For example, the length of a DNA or RNA chain provides a wavelength parameter that can be used to determine a resonant frequency. In embodiments of the present invention, the spacing of nucleotide base pairs in a DNA double helix is ~~one variable of length~~ used in the mathematical process to determine frequency. The entire length of a genome or other ~~length~~ strand of DNA, is determined by multiplying the ~~of~~ number of base pairs in the genome or other ~~length~~ strand of DNA times the spacing ~~length~~ parameter between base pairs.

It is known that base pair spacing in strands of DNA is not always consistent. Localized areas contain "squeezing" or "spreading" of base pairs in various ways. In embodiments of the methods of the present invention, the classic Watson-Crick model of base pair spacing is used. The Watson-Crick model of base pair spacing is an average spacing over the entire length of the DNA molecule. Since lengths of target nucleic acid chains comprise some hundreds or thousands of base pairs (or nucleotides), ~~Use~~ use of an average base pair spacing allows for accuracy sufficient to determine ~~therapeutic~~ resonant frequencies in accordance with the methods of the present invention.

The B-helix is the most common in-vivo DNA form in bacterial and eukaryotic life forms, and is used herein as illustration in the methods of the present invention. In the B-helix, one complete turn of the helix spans a distance of 35.4 angstroms on its axis; and there are 10.4 base pairs in each helical turn. Therefore, the spacing of individual base pairs on the axis would be 35.4 angstroms per turn divided by 10.4 base pairs per turn, which equals 3.403846 angstroms ~~per~~ spacing between each base pair. In scientific notation using SI units, the base pair spacing length is expressed as 3.403846 e-10 meters, because one angstroms equals 1 e-10 meters. ~~This~~

~~use of meters allows~~ The use of meters is required to compute the conversion of the total length parameter of the DNA chain (treated as wavelength) into a frequency.

By way of illustration using a pathogenic microorganism, the DNA genome of *Borrelia burgdorferi* strain B31 contains 910,724 base pairs. To determine wavelength, 910,724 base pairs times the base pair spacing of 3.403846 e-10 meters = 3.09996 e-4 meters total length of the genome. As described above, the length of an object can represent the object's wavelength; in this case, the length of the *Borrelia* genome represents ~~it's~~ a wavelength which can then be used for the frequency calculation.

To convert this wavelength to frequency, the following common physics relationship is used:

velocity / wavelength = frequency. (1)

If the DNA under consideration was in a medium of air, velocity would be the speed of electromagnetic radiation, or light, in air. For purposes of comparison, if *Borrelia burgdorferi* was in an air medium, according to methods of the present invention, the velocity of electromagnetic ~~radiation~~ emission through air (299,792,458 m/s) would be used in determining ~~therapeutic~~ a resonant ~~frequencies~~ frequency. Dividing this velocity by the *Borrelia* genome wavelength: (299,792,458 m/s / 3.09996 e-4 meters) = 9.6708492 e+11 Hz, ~~the therapeutic~~ which would constitute a resonant frequency for *Borrelia burgdorferi* in an air medium.

However, ~~genomic~~ nucleic acid material including that of *Borrelia burgdorferi*, ~~generally~~ often exists in a medium of living tissue. The velocity of electromagnetic ~~radiation~~ emission through a general in-vivo tissue medium is equal to the inverse of the square root of the product of the electrical permittivity and the magnetic permeability of the medium. The formula for velocity of electromagnetic radiation through a typical in-vivo tissue medium is given as:

velocity = ~~$1 / \sqrt{(\varepsilon_0 \mu_0)}$;~~ $1 / \sqrt{(\varepsilon \mu)}$. (2)

where ε is the unique electrical permittivity of the medium, and μ is the magnetic permeability of the medium.

The magnetic permeability (μ) through in-vivo tissue and most other biological substances is known to be the same as that in air: 1.2566370614 e-6 henrys / meter, and therefore is not a unique parameter. However, electrical permittivity in live body tissue (and many other materials) is not the same as for air. A representative value for electrical permittivity through in-vivo tissue is 71 e-12 farads / meter. Applying these figures to formula (2) above, the result is: velocity = $1/\sqrt{[(71 \text{ e-12 F/m}) \times (1.2566370614 \text{ e}^{-6} \text{ H/m})]}$ = 105,868,288.9 meters per second, a representative velocity of electromagnetic ~~radiation~~ emission through in-vivo tissue.

Thus, in this method of the present invention, to obtain an in-vivo ~~therapeutic~~ resonant frequency of the *Borrelia burgdorferi* DNA genome having a ~~wavelength~~ wavelength-associated parameter of 3.09996 e-4 meters, formula (1) above (velocity / wavelength = frequency) is then used to calculate a resonant frequency: 105,868,288.9 meters per second / 3.09996 e-4 meters = 3.41515016 e+11 Hz.

Using the results of the above steps, a ~~general~~ refractive index of electromagnetic ~~radiation~~ emission through in-vivo tissue can be determined. A refractive index (*n*) is given by the ratio of the speed of light in a vacuum to the speed of light in the medium under consideration. This ratio is stated as:

n = speed of light in a vacuum / speed of light in a medium. (3)

According to the steps given above, a refractive index of electromagnetic radiation through in-vivo tissue would be: (299,792,458 m/s) / (105,868,288.9 m/s) = 2.831749.

~~Then, by dividing a therapeutic determined for a particular genomic material in an air medium by the refractive index for in-vivo tissue, a therapeutic resonant frequency for the genomic material in in-vivo tissue is quickly determined.~~ An alternative method can be easily employed using this refractive index, to calculate a resonant frequency for a target nucleic acid chain in in-vivo tissue. Following the example above, dividing the resonant frequency of *Borrelia* in air (9.6708492 e+11 Hz) by the refractive index of electromagnetic ~~radiation~~ emission through in-vivo tissue (2.831749), ~~gives~~ will also give the in-vivo resonant frequency for the *Borrelia* genome (3.41515016 e+11 Hz).

The steps described above for the methods of the present invention can be adjusted to correlate with any medium ~~surrounding a genome~~ that may be surrounding the nucleic acid chain under consideration, as long as an accurate electromagnetic velocity through the medium is known or can be determined from its electrical permittity or accurate refractive index characteristics, as described above.

~~In another embodiment of the present invention, therapeutic resonant frequencies for influencing specific genomic material for in-vivo tissue are translated from resonant frequencies for the genomic material in a medium of air by multiplying or dividing the resonant frequencies in air by the square root of two. The square root of two is a close approximation of half (a factor of two) of the refractive index for electromagnetic radiation for in-vivo tissue. Using this method, the same therapeutic resonant frequencies for a particular genomic material in living tissue are determined as when the refractive index of 2.831749 is used as described above.~~

The 3.41515016 e+11 Hz in-vivo ~~therapeutic~~ resonant frequency determined above for the *Borrelia burgdorferi* genome is a frequency that lies ~~appears~~ in the infrared range of the electromagnetic spectrum. In embodiments of the present invention, methods allow access to

corresponding resonant frequencies in the ~~lower, human audio range~~ lower radio or audio ranges of the electromagnetic spectrum. For example, to determine an accurate resonant frequency in the ~~human~~ audio electromagnetic range corresponding to ~~a first therapeutic~~ the first original resonant frequency as calculated above, the first ~~therapeutic~~ resonant frequency is divided by the number 2, as many times as necessary, to reach a frequency in the audio range. In musical terms, as described above, frequencies that are related by a factor of 2, or a power thereof, are known as octaves. In the example of the in-vivo *Borrelia burgdorferi* genome, a multi-octave shift to audio range can be reached by dividing the first ~~therapeutic~~ original resonant frequency by 2^{29}, which gives a corresponding second ~~therapeutic~~ useful resonant frequency of 636.12 Hz, which is in the audio range. This process of dividing (or multiplying) any resonant frequency transposes it into a different octave by respectively doubling (or halving) its wavelength in an exact and precise manner, allowing a resonant correlation with the ~~wavelength~~ length parameter under consideration in a specific medium. Thus, in the present invention, an octave-translated ~~therapeutic~~ resonant frequency will ~~precisely correlate~~ have a precise correlation with the first ~~therapeutic~~ original resonant frequency. Each of these frequencies will resonate with and amplify the other to provide enhanced ~~therapeutic~~ beneficial effect.

~~In the example above, a therapeutic resonant frequency of the *Borrelia* genome in an air medium is 9.6708492 e+11 Hz. To determine corresponding therapeutic resonant frequencies in a different electromagnetic range, for example the human audible range, dividing by appropriate powers of 2 as described in the methods of the present invention, the resulting therapeutic resonant frequencies for *Borrelia* in air would be: 450.3 Hz, 900.7 Hz, 1801.3 Hz, 3602.7 Hz, etc.~~

~~Also as described~~ In the example above, an in-vivo ~~therapeutic~~ resonant frequency of the *Borrelia burgdorferi* genome is 3.41515016 e+11 Hz. Corresponding ~~therapeutic~~ useful resonant frequencies in a different electromagnetic range, determined by dividing by appropriate powers of 2, ~~results in~~ produces *Borrelia burgdorferi* in-vivo ~~therapeutic~~ resonant frequencies in the ~~human audible~~ audio range ~~of~~ at: 636.12 Hz, 1272.24 Hz, 2544.5 Hz, 5088.9 Hz, etc. ~~As would be expected using methods of the present invention, the in-vivo therapeutic resonant frequencies in the human audible range for *Borrelia* are also readily determined by multiplying the therapeutic resonant frequencies in the human audible range for *Borrelia* in air by the in-vivo index of refraction.~~

As another illustration, if *Borrelia* were theoretically in ~~still~~ a different medium, such as water at 40 degrees centigrade, according to methods of the present invention, the velocity of ~~EM radiation~~ electromagnetic emissions through water at that temperature (225,319,768 m/s) would be used in determining therapeutic resonant frequencies. Dividing this velocity by the ~~genome~~ genome-associated wavelength stated above: (225,319,768 m/s) / (3.09996 e-4 meters) = 7.2684734 e+11 Hz, which would be the ~~therapeutic~~ resonant frequency of *Borrelia burgdorferi* DNA ~~in~~ surrounded by water at 40 degrees centigrade.

To determine corresponding ~~therapeutic~~ resonant frequencies in a different electromagnetic frequency range, again in this instance the ~~human~~ audio range, the ~~resulting~~ resonant frequency given above is then divided by appropriate powers of 2. This gives ~~therapeutic~~ resonant frequencies in the ~~human audible~~ audio range for *Borrelia* in a 40-degree centigrade water medium of: 676.9 Hz, 1353.9 Hz, 2707.7 Hz, 5415.4 Hz, etc.

In an alternative embodiment of the present invention, methods for determining ~~therapeutic~~ resonant frequencies for a ~~DNA~~ nucleic acid chain under consideration ~~use the~~

constitutes using a simple mathematical short-cut method which eliminates almost all of the tedious numerical calculations described above. For example, to produce a useful resonant frequency in the audio range, the numerical constant ~~4,526,016,44,~~ 4,526,016.44 can be used as follows: ~~4,526,016,44 /~~ 4,526,016.44 divided by the number of ~~base pairs~~ nucleotides in a chain = frequency. ~~In this embodiment, the speed of light in air or a vacuum (299,792,458 m/s) and the Watson-Crick average base pair spacing value (3.403846 e-10 m) are multiplied together to provide a numerical constant.~~ As such, use of this particular method provides an efficient and simple means for determining a useful resonant frequency in the audio range. ~~by ascertaining the number of base pairs in a particular DNA chain, and multiplying by this constant.~~ For example, if there are 250 ~~base pairs, or~~ nucleotides in a ~~DNA~~ nucleic acid chain, 4,526,016,44 / 250 = 18,104.07 hertz. For 5,000 ~~base pair~~ nucleotides in a ~~DNA~~ nucleic acid chain, 4,526,016,44 / 5,000 = 905.20 hertz. For 22,000 ~~base pair~~ nucleotides in a ~~DNA~~ nucleic acid chain, 4,526,016,44 / 22,000 = 205.73 hertz.

This short-cut method is derived from a simple algebraic substitution into the physics formula for calculating frequencies. Taking the formula: frequency = velocity / wavelength; and then for velocity substituting the expression (and in-vivo values for): $1 / \sqrt{(\varepsilon \mu)}$; then likewise for wavelength substituting the expression (and value for): number of nucleotides in the chain times the average nucleotide spacing; and then solving the numerical values in said equation. This produces the solution: frequency = the constant 3.110254815 e+17 / number of nucleotides in the chain. The constant is then divided down by powers of two, to ranges that are more useable to produce frequencies for the purposes of using this invention.

This short-cut method for easily calculating an in-vivo resonant frequency for a nucleic acid chain, can be expanded for usefulness if resonant frequencies are needed in other regions of

the electromagnetic spectrum than the audio range. For example, it may be desirable to have a resonant frequency emitted from a device in the low radio frequency range, for example in the 4-8 megahertz range. In that case, a higher octave of the above stated constant would be used. In the case of finding a resonant frequency in that particular emission range for the 5,000 nucleotide-long chain previously mentioned in the above paragraph, the higher-octave constant of 37,077,126,680 would be divided by 5000 nucleotides, giving a useable resonant frequency of 7,415,425 hertz. It is obvious that the higher the resonant frequency range that is needed for use with any one device, the higher the constant that should be used; and if a lower resonant frequency emission range is desired, a lower constant should be used. Irregardless of the constant that is actually used to produce the frequency, it will always be a resonant frequency for that particular nucleic acid chain, because all the constants are octave-related. The formula however always remains the same:

constant / # of nucleotides = resonant frequency (4)

Using this particular embodiment, a list of constants can be generated that will be useful for easy and immediate calculation of an accurate in-vivo-related resonant frequency through a large range of frequencies. It will be stressed that such a list would only be applicable for use in association with the particular circumstance of in-vivo media surrounding the nucleic acid chain, as opposed to other media surrounding a nucleic acid chain. The user of this invention could choose a constant that works well in computing in-vivo resonant frequencies for use with the emission device at hand; if the frequencies are too high, the user could choose a lower constant, and of the frequencies are too low, the user could choose a higher constant.

As will be obvious to those skilled in the art, it would be a simple matter for a user of this invention to create a simple spreadsheet which would further speed the calculation of equation 4

stated above. One or several constants could be entered across the top columns of the spreadsheet, while the number of nucleotides could be entered in the far left column; a one-time instruction could be entered to perform the calculation of equation (4); and afterwards the user of the invention would simply need to access the spreadsheet and enter the number of nucleotides in the far left column. The spreadsheet then performs the calculation of useable resonant frequency or frequencies.

To further enable the user of this invention to easily access the method, the following list of useful constants is provided, which will enable many rapid computations of resonant frequencies from the low audio range through approximately 15 megahertz. This list can be easily further expanded by power of 2 relationships if necessary:

37,077,126,681; 18,538,563,340; 9,269,281,670; 4,634,640,835; 2,317,320,418; 1,158,660,209; 579,330,104.4; 289,665,052.2; 144,832,526.1; 72,416,263.05; 36,208,131.53; 18,104,065.76; 9,052,032.881; 4,526,016.441; 2,263,008.22; 1,131,504.11; 565,752.055; 282,876.0275; 141,438.014; 70,719.007.

As described above, in methods of the present invention, ~~corresponding therapeutic~~ additional resonant frequencies ~~are~~ can be determined for a slightly different electromagnetic range, for example in other areas of the ~~human audible~~ audio range, by dividing (or multiplying) by appropriate powers of 2. Using the example of a 250-base pair DNA chain above, 18,104.07 Hz / 2 = 9,052.035 Hz. ~~Repeating~~ Repeated division of the resulting frequency by a factor of 2, such that 9,052.035 Hz / 2 = 4526.017 Hz / 2 = 2263.008 Hz / 2 = 1131.504 Hz / 2 = 565.752 Hz, quickly produces a useful frequency in ~~the~~ a range capable of generation by ~~typical frequency-emitting devices is quickly determined~~. numerous frequency-capable emission devices. ~~To further shorten the~~ An alternate and even faster method of performing this process, is

by dividing 18,104.07 hz by 32, or 2^5 (2 to the power of 5), which yields a frequency of 565.752 Hz. Multiplying or dividing by an appropriate factor of 2 (2, 4, 8, 16, 32, 64, 128, 526, etc.) will accurately convert ~~therapeutic~~ resonant frequencies to a desired range for use in currently available frequency-capable emission devices. Shifting, or translating frequencies by factors of 2 ~~shows that a sympathetic vibration~~ produces a frequency event that is occurring at ~~a "mathematically resonant frequency," or a "mathematically resonant wavelength."~~ an octave-related resonant frequency and an octave-related resonant wavelength.

As described above, many currently available ~~frequency-emitting~~ frequency-capable emission devices are not ~~capable of producing therapeutic~~ able to accurately emit an original resonant ~~frequencies~~ frequency in the infrared (or nearby) range, as that determined for the *Borrelia burgdorferi* genome. To overcome such limitations, methods of the present invention adjust resonant frequencies upward or downward by dividing (or multiplying) by a power of 2, ~~(for the *Borrelia burgdorferi* genome, by 2^{29})~~ until a frequency in the ~~frequency-generating~~ device's range of ~~a device is achieved.~~ frequency capability is reached.

Certain ~~therapeutic~~ frequency-capable emission devices emit not only a basic frequency (also referred to as the "fundamental" frequency), but also many harmonics of that frequency. A "harmonic" is defined as a positive integer multiple of the fundamental frequency. On this basis, in methods of the present invention, additional useful frequencies can be determined and programmed into a ~~frequency-emitting~~ frequency-capable emission device such that a harmonic of ~~frequencies corresponding to a first therapeutic resonant~~ a fundamental resonant frequency in any part of the spectrum, ~~of~~ associated with a target ~~material~~ nucleic acid chain, would be emitted along with the fundamental resonant frequency. Similar additional useful frequencies can be determined by dividing the ~~therapeutic~~ resonant frequency by a positive integer, resulting

in a "subharmonic" frequency. Subharmonic frequencies ~~corresponding~~ related to a ~~first~~ ~~therapeutic~~ fundamental resonant frequency of a target ~~material~~ nucleic acid chain could also be programmed into a ~~frequency-emitting~~ frequency-capable emission device, and be emitted along with the fundamental ~~and harmonic frequencies.~~ resonant frequency. In this manner, a ~~range~~ group of ~~resonant~~ frequencies ~~corresponding~~ related to the ~~first therapeutic~~ fundamental resonant frequency, ~~each frequency of which is therapeutic,~~ can be emitted simultaneously. ~~As a result, effectiveness of a particular device can be enhanced.~~ And as is well known to those skilled in the art, selection of certain waveforms offered by some frequency-capable emission devices, will also make possible automatic inclusion of various harmonics inherently present in the particular waveform chosen for the emission.

~~As an example,~~ To further demonstrate use of, for example, a subharmonically related frequency, one in-vivo *Borrelia burgdorferi* ~~therapeutic~~ resonant frequency in an audio-range octave is 636.12 Hz. When this ~~therapeutic~~ resonant frequency is divided by the positive integer 2, the resulting subharmonic frequency is 318.06 Hz. When this subharmonic frequency is programmed into a harmonic-rich output device and emitted, the audio-range ~~therapeutic~~ resonant frequency 636.12 Hz is emitted simultaneously. ~~, increasing the likelihood that a therapeutic resonant frequency will impinge a target *Borrelia burgdorferi* genome~~. In like manner, when dividing the audio-range ~~therapeutic~~ resonant frequency 636.12 Hz by the positive integer 3, the resulting subharmonic frequency is 212.04 Hz. A harmonic-rich output device programmed with this subharmonic frequency would also emit the ~~212.04~~ 636.12 Hz therapeutic resonant frequency. ~~along with the other resonant therapeutic frequencies, further increasing the likely efficacy of the treatment.~~

The in-vivo ~~therapeutic~~ resonant frequency determined in the audio range for the *Borrelia burgdorferi* genome (636.12 Hz) is very close to a frequency (640 Hz) commonly used for lyme disease, which is caused by *Borrelia burgdorferi*. The accuracy of the methods of the present invention may be further confirmed by comparing the ~~resultant therapeutic~~ resonant frequencies produced by these methods, with ~~many known~~ numerous previously-used and publicly available ~~therapeutic~~ frequencies, many of which are available for review at http://www.electroherbalism.com/Bioelectronics/FrequenciesandAnecdotes/CAFL.htm, and various other public websites.

In another example using a different pathogen, the Rubella measles RNA virus contains 9755 ~~base pairs~~ nucleotides in its entire genome. (9755 ~~base pairs~~ nucleotides) x (the ~~base pair~~ nucleotide spacing of 3.403846 e-10 meters) = 3.32045 e-6 meters total length. This length is then used as ~~the~~ a wavelength ~~for~~ to influence the Rubella viral genome. To obtain the in-vivo ~~therapeutic~~ resonant frequency ~~of~~ for this wavelength, formula (1) above is again used: (105,868,288.9 meters per second) / (3.32045 e-6 meters) = 3.188371724 e+13 Hz. ~~A translation~~ Subsequent octave adjustment of this near-infrared frequency to ~~human~~ audio range by dividing by 2^{36}, gives a frequency of 463.97 Hz. A ~~known therapeutic~~ previously-used frequency for the condition of Rubella measles is 459 Hz, which reveals another close match ~~by the therapeutic~~ to a Rubella genome-related resonant frequency determined by the methods of the present invention.

A number of favorable responses have been reported by individuals using previously unknown ~~therapeutic~~ resonant frequencies determined by methods of the present invention. For example, one person who often ~~experiences~~ experienced severe outbreaks of herpes simplex virus used the genome-related ~~therapeutic~~ resonant frequencies derived by the methods of the

present invention for several strains of herpes simplex viruses. This individual reported a much faster healing process than what is usually experienced. ~~Another example involves a person suffering from cancerous cervical warts. After use of previously unknown therapeutic resonant frequencies relating to the genome of a strain of papilloma virus, derived by the methods of the present invention, this person reported disappearance of the warts.~~ ~~Still~~ Another example is a person infected with the chickenpox virus, who ~~was exposed to~~ used a previously unavailable ~~therapeutic~~ audio range resonant frequency derived by the methods of the present invention and associated with the varicella virus genome. ~~and~~ This person reported rapid disappearance of blisters and symptoms associated with this disease.

In addition, in-vitro laboratory testing demonstrated that exposure of a non-pathogenic strain of *Escherichia coli* to ~~a~~ its genome-related ~~therapeutic~~ resonant frequency produced a statistically significant reduction in the number of colonies in cultures.

Additional case results are presented in fuller detail at the end of this description.

Genes and Gene Sections

Methods of the present invention for determining ~~therapeutic~~ resonant frequencies as described above can also be applied to sections of DNA and/or RNA, as in genes, for example. Using genetic coding information, methods of the present invention for determining ~~therapeutic~~ resonant frequencies may also be utilized with other sub-components of genomic material, such as the coding associated with enzymes, immune factors, oncogenes, oncogenic growth factors, and other proteins.

In embodiments of the present invention, ~~therapeutic~~ resonant frequencies are determined using basic information about a protein, for example, how many amino acids are in the protein chain. Because an amino acid is always coded by three ~~base pairs~~ nucleotides in the messenger

RNA, the number of ~~base pairs~~ nucleotides for use in determining resonant frequencies can be ascertained by multiplying the number of amino acids in a protein chain by 3. For example, if there are 100 amino acids in a protein chain, there would be 300 ~~base pairs~~ nucleotides in the final messenger RNA related to that protein. Thus, according to methods of the present invention, ~~to determine a therapeutic~~ a resonant frequency can be easily determined with the previously mentioned shortcut method using a constant: 4,526,016,44 / 300 ~~base pairs~~ nucleotides = 15,086.72 Hz. Using a factor of 2^5 to determine a corresponding ~~therapeutic~~ resonant frequency in a lower octave within the acoustic range as described in the methods of the present invention above, the resulting ~~therapeutic~~ resonant frequency would be: 15,086.72 Hz / 32 = 471.46 Hz. ~~which is a frequency that currently available frequency-emitting devices are capable of generating.~~

As an example, the int-1 mammary oncogene contains 4522 base pairs of DNA. A ~~therapeutic~~ resonant frequency for this oncogene determined by the methods of the present invention above is 2001.77 Hz. This ~~therapeutic~~ resonant frequency is very close to 2008 Hz, a commonly used cancer-related frequency. Furthermore, the messenger RNA associated with the final form of the transforming protein of the int-1 mammary oncogene contains 1112 ~~base pairs~~ nucleotides. A ~~therapeutic~~ resonant frequency for this transforming protein determined by the methods of the present invention above is 2035.08 Hz, which is also in a range of cancer-related frequencies currently in use.

As another example, the messenger RNA for the cancer-associated enzyme human tyrosine kinase contains 3151 ~~base pairs~~ nucleotides. ~~Using 3151 base pairs as the wavelength,~~ A ~~therapeutic~~ audio range resonant frequency for this ~~enzyme,~~ enzyme's messenger RNA, as determined by the methods of the present invention above, is 2872.7 Hz. This frequency is very

close to the cancer-related frequency 2876 Hz, which, along with ~~"resonant octaves"~~ related octaves thereof, have been used throughout most of the twentieth century in association with certain cancer therapy modalities.

Another example is a precursor gene for *Borrelia burgdorferi* outer surface protein A (ospA), ~~contains,~~ which contains 822 base pairs. ~~Using 822 base pairs as the wavelength, a therapeutic~~ A resonant frequency for this ~~protein~~ protein's messenger RNA determined by the methods of the present invention above, after being factored by powers of 2 to the audible range, is 344.13 Hz. A previously known frequency currently used for therapy related to lyme disease is 344 Hz, nearly an exact match.

As can be seen, ~~therapeutic~~ resonant frequencies for genes, gene sections, constituent components of genomic material; and those for the precursor nucleotide chains of enzymes, proteins, and the like, can be determined more readily and efficiently by methods of the present invention than for example, by trial and error. ~~reliably match frequencies found by other methods.~~

Favorable responses have also been reported ~~to~~ following the use of previously unavailable ~~therapeutic~~ resonant frequencies determined by methods of the present invention, relating to genes, components of genes, and/or messenger RNA coding associated with certain proteins. For example, an individual diagnosed with lung cancer used ~~therapeutic~~ resonant frequencies related to certain cancer growth factors and the K-ras oncogene, which is associated with his type of tumor. It is reported that this individual experienced eradication of lung tumor material. Another example is a student experiencing symptoms of both lyme disease and ehrlichiosis, who was unable to attend school for a year and half due to the severity of symptoms. The student used previously unavailable ~~therapeutic~~ resonant frequencies, as

determined by methods of the present invention, for certain membrane and antigenic proteins associated with the organism *Ehrlichia chaffeensis*. Within two weeks of beginning therapy with those therapeutic resonant frequencies, this student was well enough to return to school.

There are numerous public internet locations available for obtaining coding information on genomes, genes, messenger RNA, etc. One of the primary sources for selected full genomes is at www.ncbi.nlm.nih.gov/entrez/query.fcgi?db+Genome&itool=toolbar. A related site available for more thorough searches of genomes, genes, protein information, and messenger RNA can be accessed at www.ncbi.nlm.nih.gov/entrez/query.fcgi?DB=pubmed.

The case results presented below further demonstrate the efficacy and usefulness of the methods presented in this invention. In some instances, use of the invention has demonstrated repeatability of results.

Case Results

Example 1.

A healthy and physically active 40-year old man diagnosed by physicians with a case of Barmah Forest disease (a mosquito-transmitted viral disease endemic to certain regions of southern Asia), used a frequency-emitting device with numerous frequencies in an attempt to alleviate the clinical effects of the disease. The effects included severely debilitating arthritis-type conditions, and significant alteration of iron metabolism and levels in the blood. Lab results of blood iron levels and related factors are used by physicians to diagnose this viral disease. The patient was unable to work at his previous full-time job because of the disease. The iron level at the time of diagnosis was 10 μmol/L (at the very bottom of reference range), and remained near that level after his initial use of the device and commonly-used frequencies. The debilitating arthritis symptoms likewise continued without positive resolution, indicating the frequencies being used were not efficacious. The patient had been suffering in this manner for 10 months. The first

frequency protocol was then altered to consist of a "second resonant frequency" (as previously described in this application) for the full genome, along with additional "second resonant frequencies" relating specifically to the messenger RNAs of several active genes of the virus. After the frequency protocol was changed, the patient experienced nearly full clinical recovery within two weeks, complete recovery shortly thereafter, and was able to resume his normal full-time heavy physical activity. The recovery was later confirmed by an iron test at 21.7 μmol/L, which is in normal range. No other medical protocols were changed during the time that the DNA-related frequency program was used. The man remains fully recovered with complete and permanent absence of any disease symptoms. This case has been monitored for 5 years.

Example 2.

A healthy woman in her middle 30s was diagnosed with cervical cancer confirmed by presence of human papilloma virus, and underwent a hysterectomy procedure. Subsequent physical examinations showed continued presence of cancerous cervical lesions, and the patient was scheduled for a surgical procedure to remove them. Before that procedure took place, the patient had begun using a frequency emission device with numerous frequencies, in an effort to clear the condition. This initial effort did not result in successful clearance of the lesions. The frequency program was then altered to consist of a "second resonant frequency" (as previously described in this application) corresponding to the genome of human papilloma virus type 16. Six weeks after the commencement of use of the new frequencies, physical examination discovered a complete disappearance of all cervical lesions, and the surgery was cancelled. A subsequent blood test showed disappearance of the viral antibodies that had previously been present in the blood. Ongoing monitoring indicates continued absence of any cervical lesions. This case has been monitored for four years.

Example 3.

A middle-aged American man in his 30s had been diagnosed with AIDS, confirmed by HIV-1 viral load and CD4 cell counts. The use of various medical and integrative alternative protocols for a period of 6-7 years had been partially but not totally successful, and included use of frequency emission devices with various frequency programs. After a period of time the viral count gradually climbed to 220,000 copies/ml. The patient at this point in time began using a

new set of frequencies, each of which consisted of a "second resonant frequency" (as previously described in this application) that corresponded to a specific gene component of the virus. There were no other changes initiated in his medical protocol at this time. Subsequent to the start and daily use of the new frequencies, a blood test three weeks later showed a virus count of 100 copies/ml. Another blood test three weeks afterwards reported a count of less than 50 copies/ml (the limit of sensitivity for that test). The latest and blood test (current to the date of this communication) shows a count of less than 50 copies/ml. This individual was not taking any anti-viral drugs during the period of time covering this report, and had not been taking any such drugs for a period for 3.5 years prior to use of DNA-related frequencies as described in this application. This case continues to be carefully monitored.

Example 4.

In a case similar to example 3, an American woman diagnosed with AIDS confirmed by viral load and CD cell count lab tests. The patient has experienced a drop in viral load from 15,000 copies/ml to 80 copies/ml in a period of three months, using the same frequency program of "second resonant frequencies" as the person described in example 3. This case continues to be carefully monitored.

Example 5.

This example addresses a community outbreak of what physicians described as contagious shingles also resembling chickenpox (itching, painful, oozing and sometimes bloody lesions), spreading among both adults and children via physical contact. Some individuals had been suffering severe symptoms for a period of 2-3 months. Patients had been prescribed anti-viral and anti-inflammatory drugs, but the drugs did little if anything to resolve the affliction. Some patients in near desperation sought alternative assistance and commenced use of a frequency emission device. That device was programmed with a number of frequencies available from public sources. Those frequencies had partial effects on part of the symptoms in a few but not all individuals, however the effects were not permanent and did not resolve the affliction. The frequency program was later altered to consist of a "second resonant frequency" (as previously described in this application) correlating to the genome of human herpesvirus 3, which is the causative agent of chickenpox and shingles. The change in effect on the patients was

immediately noticeable. For some individuals, especially the children, the itching and pain was largely resolved within 2-3 hours. For most others, the lesions were noticeably healing within 24-72 hours. A total of 30 individuals from the community were treated, and the outbreak was stopped. Many of the patients only needed one frequency session for the problem, and 7 of the more severely afflicted persons needed 2 or 3 sessions.

Example 6.

An elderly woman was hospitalized and diagnosed with a lung infection caused by the bacterium Gordona sputi, which became totally unresponsive to antibiotics or any other medical protocols. Her physicians told her they could do nothing more, advised her to prepare for death, and sent her home from the hospital. The woman began use of a frequency device using commonly available frequencies characterized by many reports as having anti-bacterial effects. The infection was not resolved and the illness continued. The program was then altered to consist of several "second resonant frequencies" (as previously described in this application) specifically correlated with important components of this bacteria (the genome has not been decoded, thus the frequency related to the full genome could not be used). The infection was cleared within a short time span (1-2 weeks), the woman completely recovered, and has never experienced a relapse. This case has been followed for 3-1/2 years.

Example 7.

A 50 year old woman employed as a nurse in a hospital acquired a herpesvirus infection via contact with a patient. The infection manifested as the condition known as Herpes Whitlow, caused by human herpesvirus 1, and manifested on her hands. As is characteristic of infections from this virus, the clinical lesions would appear and then slowly heal over a period of approximately 10 days. The woman had been suffering from this condition for 7 years, and occasionally made it difficult for her to work in her profession. At the time of the most recent outbreak of lesions, she began using a "second resonant frequency" (as previously described in this application) which relating to the genome of human herpesvirus 1. The lesions on her hands healed within three days, as compared to the customary 14 days healing time without use of this frequency determination method. The woman additionally stated that use of non-DNA-related

frequencies (as described in this application) somtimes made the healing process take longer, than if she had done nothing at all.

Example 8.

Two American missionaries working in Africa had been fighting malaria infections on a continual basis, as is common in that region. Over a four-month period, they used a frequency emission device with numerous frequency sets. By the fourth month they were able to narrow down a successful outcome to a basic set of six numbers solely consisting of "second resonant frequencies" (as previously described in this application), that correlated with important nucleotide components of the causative organism Plasmodium falciparum. One specific result was seen in a man with the following history: day 1, a mid-morning initial Quantitative Buffy Coat test showed 89 malaria parasites per 200 white blood cells (WBCs), which is equivalent to 3,560 parasites per microliter of blood. Two sessions with the aforementioned "second resonant frequencies" were received by the individual later that morning and in the late afternoon. On day 2 at 8 am, the same blood test showed 10 malaria parasites per 200 WBCs (or 400 per microliter), which constitutes an 80% parasite count reduction within less than 24 hours. These results were re-checked at 9 am, with the count being 7 malaria parasites per 200 WBCs (or 280 per microliter). A different lab test performed at the same time (blood smear), gave a result of 5 malaria parasites per 200 WBCs (or 200 per microliter). A further blood smear re-test later that morning at a second medical facility gave a result of 0 (zero) parasites per 200 white blood cells. The man also reported complete cessation of clinical symptoms (fever, body aches, headache) that same day. Tests on day 3 at 10 am gave the following results: Quantitative Buffy Coat, 7 malaria parasites per 200 WBCs (280 per microliter); blood smear, 5 malaria parasites per 200 WBCs (200 per microliter). Importantly, no anti-malaria drugs were taken during this period of frequency sessions.

Similar reductions of malaria parasite levels along with cessation of clinical symptoms were seen in several other people after using the DNA-related "second resonant frequencies". Because reinfection from mosquitoes is an ongoing problem, it is not expected that use of this non-invasive technology would produce a permanent malaria cure in humans; however, repeated use of relevant frequencies during episodes of reinfection could, according to the results shown above, significantly reduce levels of the parasitic organism, and eventually reduce the cycle of

reinfection in mosquitoes as well, if enough people were able to take advantage of the technology.

~~**Atoms and Molecules**~~

~~Methods of the present invention for determining therapeutic resonant frequencies as described above can also be applied to atoms and molecular structures, using available atomic and molecular data. Generally, finding an atomic or molecular mass-related frequency is accomplished by multiplying the mass in kilograms by a factor (speed of light squared / Plank's constant). However, because atoms and molecules in many biological settings are not in a vacuum or air medium, a different method for determining atomic or molecular mass-related frequencies is used in the present invention to account for the actual surrounding biological medium. In an embodiment of the present invention, a therapeutic resonant frequency related to an atomic or molecular mass is determined by first calculating an atom's or molecule's deBroglie wavelength, using the following formula:~~

~~wavelength = Plank's constant / (mass in kilograms x speed of light). (4)~~

~~To determine an appropriate therapeutic resonant frequency, the velocity of electromagnetic radiation through a specific medium is adjusted in relation to that medium, using the following relationship:~~

~~velocity of electromagnetic radiation through a medium / wavelength = therapeutic resonant frequency in the medium. (5)~~

~~For example, using the atom uranium-238 with a kilogram mass of 3.952929 e-25 kg (atomic mass 238.0507847), formula (4) above gives a deBroglie wavelength of 5.5913498 e-18 meters. To determine a therapeutic resonant frequency for uranium-238 in live tissue, formula (5) above is used: (105,868,288.9 m/s) / 5.5913498 e-18 m = 1.893429887 e+25 Hz.~~

~~Using a factor of 2^{73} to determine a corresponding therapeutic resonant frequency in a lower octave within the acoustic range according to the methods of the present invention, the resulting therapeutic resonant frequency would be: 1.893429887 e+25 Hz / 2^{73} = 2004.7 Hz. This is a frequency that currently available frequency-emitting devices are capable of generating. Indeed, this therapeutic resonant frequency is in a range commonly used as cancer therapy frequencies.~~

~~In embodiments of the present invention, methods for determining an appropriate therapeutic resonant frequency for atoms and molecules, as described above, adjust for the velocity of electromagnetic radiation through a specific medium in relation to that medium. As an illustration, if uranium-238 was in a water medium at 40 degrees centigrade, adjustment is made for the velocity of EM radiation through water at 40 degrees centigrade, which is 225,319,768 m/s. A therapeutic resonant frequency is then determined by dividing this velocity by the uranium-238 de Broglie wavelength, using formula (5) above: (225,319,768 m/s) / 5.5913498 e-18 meters = 4.029792 e+25 Hz.~~

~~This frequency when translated by "octaves" to an audio range octave by dividing by 2^{74}; gives a frequency of 2133.3 Hz. This frequency is also very close to an important area of commonly used cancer frequencies.~~

~~In another example, the molecule benzo[*a*]pyrene has a kg mass of 4.18612 e-25 kg (atomic mass 252.0939). It is considered a major carcinogenic molecule in smoke from cigarettes, coal, and other sources. Formula (1) gives a deBroglie wavelength of 5.279879 e-18 meters. Using formula (2), the resonant frequency of this molecule in living tissue would be: (105,868,288.9 m/s) / 5.279879 e-18 meters = 2.005127297 e+25 Hz.~~

~~Using a factor of 2^{73} to determine a corresponding therapeutic resonant frequency in a lower octave within the acoustic range according to the methods of the present invention, the resulting therapeutic resonant frequency would be: 2.005127297 e+25 Hz / 2^{73} = 2123 Hz. Again, this therapeutic resonant frequency is a range of previously available frequencies commonly used in cancer therapy.~~

~~As with complete genomes and with genes and gene sections, therapeutic resonant frequencies for atoms and molecules determined more readily and efficiently by methods of the present invention than by other methods, such as by trial and error, reliably match frequencies found by other methods.~~

While the present invention has been described with reference to several specific embodiments, those skilled in the art will be able to make various modifications to the described embodiments, for instance, by ~~factoring therapeutic~~ octave-adjusting resonant frequencies to electromagnetic ranges to other than ~~human-audible ranges~~ the audio range, and by adjusting for use with various media, without departing from the spirit and scope of the invention. It is therefore to be understood that within the scope of the appended claims the invention may be practiced other than as specifically described herein.

ABSTRACT

Methods are provided for readily and efficiently determining resonant frequencies that can be used ~~therapeutically~~ beneficially, for stimulation ~~and/or~~ or debilitation of specific types of

DNA and/or RNA, genes ~~and~~ or gene sections, ~~atoms and molecules, and/or living tissue,~~ in a variety of circumstances and settings. ~~surrounding microbiological and biochemical events.~~ The methods are intended to influence nucleic acid chains, including ~~treatment of~~ those related to various pathogenic human and animal diseases and conditions, ~~agriculture, water~~ ~~systems,~~ agriculture-related diseases, pathogen contamination of water systems or food processing systems, and others. Methods allow determination of ~~therapeutic~~ resonant frequencies associated with nucleic acids, ~~for use in various media having different refractivities.~~ which may be present in a variety of surrounding media that may have velocities of propagation of electromagnetic waves different from that of air. ~~Therapeutic~~ Useful resonance frequencies thus determined are adapted for use with currently available ~~frequency emitting~~ frequency-capable emission devices by translating resonant frequencies to electromagnetic ranges capable of generation by such devices.